Complete Summary

GUIDELINE TITLE

Prevention of hepatitis A through active or passive immunization: recommendations of the Advisory Committee on Immunization Practices (ACIP).

BIBLIOGRAPHIC SOURCE(S)

Advisory Committee on Immunization Practices (ACIP), Fiore AE, Wasley A, Bell BP. Prevention of hepatitis A through active or passive immunization: recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR Recomm Rep 2006 May 19;55(RR-7):1-23. [197 references] PubMed

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Centers for Disease Control and Prevention. Prevention of hepatitis A through active or passive immunization: Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR Recomm Rep 1999 Oct 1;48(RR-12):1-37.

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INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

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SCOPE

DISEASE/CONDITION(S)

Hepatitis A

GUIDELINE CATEGORY

Prevention

CLINICAL SPECIALTY

Family Practice Infectious Diseases Internal Medicine Pediatrics Preventive Medicine

INTENDED USERS

Advanced Practice Nurses
Allied Health Personnel
Health Plans
Nurses
Patients
Physician Assistants
Physicians
Public Health Departments

GUI DELI NE OBJECTI VE(S)

- To present the final step in the childhood hepatitis A immunization strategy, routine hepatitis A vaccination of children nationwide
- To present previous recommendations regarding the vaccination of persons in groups at increased risk for hepatitis A or its adverse consequences and recommendations regarding the use of immune globulin (IG) for protection against hepatitis A

TARGET POPULATION

- For preexposure protection with hepatitis A virus (HAV) vaccination: All children aged 1 year or greater who are previously unvaccinated; all other persons at increased risk for HAV infection or the adverse consequences of infection. Risk groups include persons who travel to or work in countries that have high or intermediate endemicity of infection, men who have sex with men, users of injection and noninjection illicit drugs, persons who have occupational risk of infection (i.e., who work with HAV-infected primates or who work with HAV in a research laboratory setting), persons with clotting-factor disorders, and persons with chronic liver disease
- For postexposure prophylaxis with immune globulin: All persons who have been exposed to HAV who have not previously been administered hepatitis A vaccine.

INTERVENTIONS AND PRACTICES CONSIDERED

- 1. Routine vaccination of all children against hepatitis A virus (HAV) infection with hepatitis A vaccines (HAVRIX or VAQTA) beginning at age 1 year
- 2. Continuation of hepatitis A vaccination programs for children aged 2-18 years in states, counties, and communities with existing programs
- 3. Catch-up vaccinations for unvaccinated children aged 2-18 years in areas without existing programs

- 4. Preexposure protection against HAV infection with hepatitis A vaccines (HAVRIX, VAQTA, or TWINRIX [combined hepatitis A/B vaccine]) for all other individuals at increased risk for infection or who desire protection against HAV infection
- 5. Postexposure prophylaxis against HAV infection with immune globulin
- 6. Prevaccination serologic testing for certain population groups

MAJOR OUTCOMES CONSIDERED

- Risk for and incidence of hepatitis A infection
- Immunogenicity of hepatitis A vaccines
- Effectiveness of hepatitis A vaccines

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Not stated

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Not stated

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

Prevaccination Serologic Testing for Susceptibility

Antibody production in response to hepatitis A virus (HAV) infection results in lifelong immunity to hepatitis A and, presumably, to HAV infection. Vaccination of a person who is immune because of previous infection does not increase the risk for adverse events. In populations that have expected high rates of previous HAV infection, prevaccination testing may be considered to reduce costs by not vaccinating persons who are already immune. Testing of children is not indicated because of their expected low prevalence of infection. For adults, the decision to test should be based on 1) the expected prevalence of immunity, 2) the cost of vaccination compared with the cost of serologic testing (including the cost of an additional visit), and 3) the likelihood that testing will not interfere with initiation of vaccination. For example, if the cost of screening (including laboratory and office visits) is one third the cost of the vaccine series, then screening potential recipients in populations for which the prevalence of infection is likely to be >33% should be cost-effective.

Persons for whom prevaccination testing will likely be most cost-effective include adults who were either born in or lived for extensive periods in geographic areas that have a high or intermediate endemicity of hepatitis A (see Figure 4 in the original guideline document); older adolescents and adults in certain population groups (i.e., American Indians, Alaska Natives, and Hispanics); and adults in certain groups that have a high prevalence of infection (e.g., injection-drug users). In addition, prevalence might be high enough among all older adults to warrant prevaccination testing. Overall anti-HAV prevalence among persons aged >40 years, determined by Third National Health and Nutrition Examination Survey (NHANES-III) testing, was >33%. Therefore, if the cost of screening is one third the cost of the vaccine series, prevaccination testing of any person aged >40 years would likely be cost-effective. Commercially available tests for total anti-HAV should be used for prevaccination testing.

Cost-Effectiveness of Hepatitis A Vaccination of Children

The cost-effectiveness of nationwide routine hepatitis A vaccination was evaluated in an analysis that used a Markov model to follow a single U.S. birth cohort of approximately 4 million persons from birth in 2005 through age 95 years or death. Compared with no childhood vaccination, routine vaccination at age 1 year would result in 183,806 fewer infections and 32 fewer deaths in each cohort. The cost-effectiveness ratio was estimated at \$173,000 per life year gained and \$24,000 per quality-adjusted life year (QALY) gained. Compared with 2003 vaccine coverage levels, the incremental cost-effectiveness ratio of routine nationwide vaccination at age 1 year was \$73,000 per QALY gained. When out-of-cohort herd immunity was taken into account, vaccination at age 1 year yielded a societal cost of \$1,000 per QALY gained. Another economic analysis that included the estimated reduction in secondary cases among household contacts of infected children yielded similar results.

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Not stated

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Preexposure Protection Against Hepatitis A Virus (HAV) Infection

The following recommendations for hepatitis A vaccination are intended to further reduce hepatitis A morbidity and mortality in the United States and make possible consideration of eventual elimination of HAV transmission. Hepatitis A vaccination is recommended routinely for children, for persons who are at increased risk for infection, and for any person wishing to obtain immunity.

Children

- All children should receive hepatitis A vaccine at age 1 year (i.e., 12 to 23 months). Vaccination should be completed according to the licensed schedules (see <u>Tables 2</u> and <u>3</u> in the original guideline document) and integrated into the routine childhood vaccination schedule. Children who are not vaccinated by age 2 years can be vaccinated at subsequent visits.
- States, counties, and communities with existing hepatitis A vaccination programs for children aged 2 to 18 years are encouraged to maintain these programs. In these areas, new efforts focused on routine vaccination of children aged 1 year should enhance, not replace, ongoing programs directed at a broader population of children.
- In areas without existing hepatitis A vaccination programs, catch-up vaccination of unvaccinated children aged 2 to 18 years can be considered. Such programs might especially be warranted in the context of increasing incidence or ongoing outbreaks among children or adolescents.

Persons At Increased Risk for HAV Infection

Persons Traveling to or Working in Countries That Have High or Intermediate Endemicity of Infection

All susceptible persons traveling to or working in countries that have high or intermediate hepatitis A endemicity (see Figure 4 in the original guideline document) should be vaccinated or receive immune globulin (IG) before departure (see Tables 1 to 4 in the original guideline document). Hepatitis A vaccination at the age-appropriate dose is preferred (see (Tables 2 to 4 in the original guideline document). Prevaccination testing should be considered for older travelers or for younger persons in certain population groups (see "Prevaccination Serologic Testing for Susceptibility" in the original guideline document).

Travelers to Australia, Canada, western Europe, Japan, or New Zealand (i.e., countries in which endemicity is low) are at no greater risk for infection than

persons in the United States. Data are not available regarding the risk for hepatitis A for persons traveling to certain areas of the Caribbean, although vaccine or IG should be considered if travel to areas that have questionable sanitation is anticipated.

The first dose of hepatitis A vaccine should be administered as soon as travel is considered. Travelers who are administered vaccine can be assumed to be protected within 4 weeks after receiving the first vaccine dose. Persons administered single-antigen hepatitis A vaccine often will have detectable anti-HAV by 2 weeks after the first vaccine dose; the proportion of persons who will have detectable anti-HAV at 2 weeks might be lower when lower vaccine dosages are used (e.g., in TWINRIX). However, no data are available regarding the risk for hepatitis A among persons vaccinated 2 to 4 weeks before departure. Because protection might not be complete until 4 weeks after vaccination, for optimal protection, persons traveling to an area in which risk is high <4 weeks after the initial dose also may be administered IG (0.02 mL/kg), but at a different anatomic injection site. Travelers departing in <4 weeks who do not or cannot receive IG should nonetheless receive hepatitis A vaccine and be informed that they might not be optimally protected from acquiring hepatitis A in the immediate future (i.e., subsequent 2 to 4 weeks). Completion of the vaccine series according to the licensed schedule (Tables 2 to 4 in the original guideline document) is necessary for long-term protection.

Travelers who are allergic to a vaccine component or who elect not to receive vaccine should receive a single dose of IG (0.02 mL/kg), which provides effective protection against hepatitis A for up to 3 months (<u>Table 1</u>). Travelers whose travel period is >2 months should be administered IG at 0.06 mL/kg; administration must be repeated if the travel period is >5 months (<u>Table 1</u>).

Men Who Have Sex with Men (MSM)

MSM (both adolescents and adults) should be vaccinated. Prevaccination testing is not indicated for the vaccination of adolescents and young adults in this population but might be warranted for older adults (see "Prevaccination Serologic Testing for Susceptibility" in the original guideline document). Studies have suggested that the majority of MSM would accept hepatitis A vaccination if recommended by their providers. Health-care providers in primary-care and specialty medical settings in which MSM receive care should offer hepatitis A vaccine to patients at risk. Implementation strategies to overcome barriers and increase coverage (e.g., use of standing orders) should be considered.

Users of Injection and Noninjection Drugs

Vaccination is recommended for users of injection and noninjection illicit drugs. Prevaccination testing is not indicated for the vaccination of adolescent users of illicit drugs but might be warranted for certain adults. The need might depend on the particular characteristics of the population of drug users, including the type and duration of drug use. Providers should obtain a thorough history to identify patients who use or are at risk for using illicit drugs and might benefit from hepatitis A vaccination. Implementation strategies to overcome barriers and increase coverage (e.g., use of standing orders) should be considered.

Persons Who Have Occupational Risk for Infection

Persons who work with HAV-infected primates or with HAV in a research laboratory setting should be vaccinated. Studies conducted among U.S. workers exposed to raw sewage do not indicate increased risk for HAV infection. No other populations have been demonstrated to be at increased risk for HAV infection because of occupational exposure.

Persons with Clotting-Factor Disorders

Susceptible persons who are administered clotting-factor concentrates, especially solvent-detergent--treated preparations, should receive hepatitis A vaccine. Changes in clotting factor preparation practices and donor screening have greatly reduced the risk for hepatitis A for recipients of clotting factors.

Vaccination of Persons with Chronic Liver Disease

Susceptible persons with chronic liver disease should be vaccinated. Available data do not indicate a need for routine vaccination of persons with chronic hepatitis B virus (HBV) or hepatitis C virus (HCV) infections without evidence of chronic liver disease. Susceptible persons who are either awaiting or have received liver transplants should be vaccinated.

Hepatitis A Vaccination During Outbreaks

The frequency of large communitywide outbreaks has diminished considerably since implementation of the recommended childhood hepatitis A vaccination programs. Implementation of the recommendations in this report should further reduce occurrence of outbreaks. If communitywide outbreaks occur, accelerated vaccination may be considered as an additional control measure. Factors to consider in deciding whether to initiate an outbreak-control vaccination program include the feasibility of rapidly vaccinating the target population of children, adolescents, or young adults, and program cost. Ongoing vaccination of children should be sustained to maintain high levels of immunity and prevent future epidemics.

Limited outbreaks, especially those involving adults at increased risk (e.g., illicit drug users or MSM), are likely to continue to occur until higher vaccine coverage is achieved in these populations. Vaccination programs to control these outbreaks have been difficult to implement. Programs to control hepatitis A outbreaks among users of illicit drugs, especially methamphetamine, that focused on vaccination in county jails and similar venues (e.g., court-ordered diversion programs) have met with some limited success, at least in terms of the provision of vaccine. In general, efforts to control and prevent hepatitis A outbreaks among adults in these populations should be focused primarily on initiating and sustaining routine vaccination of these persons.

The frequency of outbreaks in child care centers has also decreased in recent years and should continue to decrease with more widespread vaccination of young children. Limited data exist regarding the role of hepatitis A vaccine in controlling outbreaks in these settings. If outbreaks are recognized in child care centers, use

of IG as recommended is effective in limiting transmission to employees and families of attendees (see "Postexposure Prophylaxis with IG," below). Previously unvaccinated children receiving postexposure prophylaxis with IG should also receive hepatitis A vaccine.

Persons who work as food handlers can contract hepatitis A and potentially transmit HAV to others. One national economic analysis concluded that routine vaccination of all food handlers would not be economical from a societal or restaurant owner's perspective. Nonetheless, to decrease the frequency of evaluations of food handlers with hepatitis A and the need for postexposure prophylaxis of patrons, consideration may be given to vaccination of employees who work in areas where state and local health authorities or private employers determine that such vaccination is appropriate. Food handlers who receive hepatitis A vaccine should be provided with a record of the immunization. Those who do not should be informed of the signs and symptoms of hepatitis A and taught food preparation practices that reduce the risk for fecal contamination.

Postexposure Prophylaxis with IG

Persons who have been recently exposed to HAV and who have not previously received hepatitis A vaccine should be administered a single dose of IG (0.02 mL/kg) as soon as possible. Efficacy when administered >2 weeks after exposure has not been established. Persons who have been administered 1 dose of hepatitis A vaccine at \geq 1 month before exposure to HAV do not need IG.

Because hepatitis A cannot be reliably diagnosed on clinical presentation alone, serologic confirmation of HAV infection in index patients by IgM anti-HAV testing is recommended before postexposure treatment of contacts. Screening of contacts for immunity before administering IG is not recommended because screening would result in delay.

If hepatitis A vaccine is recommended for a person being administered IG (e.g., a person with a recent exposure but also an indication for vaccination), it may be administered simultaneously with IG at a separate anatomic injection site. Unlike IG, hepatitis A vaccine is not licensed for use as postexposure prophylaxis. The completion of studies comparing IG with hepatitis A vaccine for postexposure prophylaxis is needed before vaccine can be recommended in this setting. IG should be administered to previously unvaccinated persons in the following situations.

Close Personal Contact

IG should be administered to all previously unvaccinated household and sexual contacts of persons with serologically confirmed hepatitis A. In addition, persons who have shared illicit drugs with a person who has serologically confirmed hepatitis A should receive IG and hepatitis A vaccine. Consideration should also be given to providing IG to persons with other types of ongoing, close personal contact with a person with hepatitis A (e.g., regular babysitting).

Child Care Centers

IG should be administered to all previously unvaccinated staff and attendees of child care centers or homes if 1) one or more cases of hepatitis A are recognized in children or employees or 2) cases are recognized in two or more households of center attendees. In centers that do not provide care to children who wear diapers, IG need be administered only to classroom contacts of an index patient. When an outbreak occurs (i.e., hepatitis A cases in three or more families), IG also should be considered for members of households that have children (center attendees) in diapers. Hepatitis A vaccine may be administered at the same time as IG for children receiving postexposure prophylaxis in child care centers.

Common-Source Exposure

If a food handler receives a diagnosis of hepatitis A, IG should be administered to other food handlers at the same establishment. Because common-source transmission to patrons is unlikely, IG administration to patrons typically is not indicated but may be considered if 1) during the time when the food handler was likely to be infectious, the food handler both directly handled uncooked foods or foods after cooking and had diarrhea or poor hygienic practices, and 2) patrons can be identified and treated <2 weeks after the exposure. In settings in which repeated exposures to HAV might have occurred (e.g., institutional cafeterias), stronger consideration of IG use might be warranted. In the event of a common-source outbreak, IG should not be administered to exposed persons after cases have begun to occur because the 2-week period during which IG is effective will have been exceeded.

Schools, Hospitals, and Work Settings

IG is not routinely indicated when a single case occurs in an elementary or secondary school, an office, or other work settings, and the source of infection is outside the school or work setting. Similarly, when a person who has hepatitis A is admitted to a hospital, staff should not routinely be administered IG; instead, careful hygienic practices should be emphasized. IG should be administered to persons who have close contact with index patients if an epidemiologic investigation indicates HAV transmission has occurred among students in a school or among patients or between patients and staff in a hospital.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is not specifically stated for each recommendation.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Implementation of these recommendations will reinforce existing vaccination programs, extend the benefits associated with hepatitis A vaccination to the rest of the country, and create the foundation for eventual consideration of elimination of indigenous hepatitis A virus transmission.

POTENTIAL HARMS

Data concerning adverse effects of hepatitis A virus (HAV) vaccines, derived from pre-licensure clinical studies, reports following licensure of HAVRIX in Europe and Asia, other post-licensure studies and reports to the national Vaccine Adverse Events Reporting System (VAERS), are summarized below:

Local Reactions to HAV Vaccines

- HAVRIX: Approximately 50,000 persons were administered HAVRIX in prelicensure clinical studies. No serious adverse events were attributed definitively to hepatitis A vaccine. Among adults, the most frequently reported side effects occurring <3 days after the 1,440 EL.U. dose were soreness at the injection site (56%), headache (14%), and malaise (7%). In clinical studies among children, the most frequently reported side effects were soreness at the injection site (15%), feeding problems (8%), headache (4%), and injection-site induration (4%).
- VAQTA: Approximately 10,000 persons were administered VAQTA in prelicensure clinical studies, and no serious adverse events were reported among participants. Among adults, the most frequent side effects that occurred <5 days after vaccination included tenderness (53%), pain (51%), and warmth (17%) at the injection site and headache (16%). Among children, the most common side effects reported were pain (19%), tenderness (17%), and warmth (9%) at the injection site.

Serious Adverse Events

- An estimated 1.3 million persons in Europe and Asia were vaccinated with HAVRIX before the vaccine's licensure in the United States in 1995. For serious adverse events for which background incidence data can be estimated (e.g., Guillain-Barré syndrome and brachial plexus neuropathy), rates for vaccine recipients were not higher than would be expected for an unvaccinated population.
- No serious adverse events were reported for approximately 40,000 children who were administered the 360-EL.U. dose of HAVRIX in the protective efficacy study. In a post-licensure study of 11,417 children and 25,023 adults who were administered VAQTA, no serious adverse events occurred that were considered to be associated with administration of vaccine. A published postlicensure evaluation of safety among 2,000 child and adult recipients identified no serious adverse events associated with VAQTA.
- Since vaccine licensure in 1995, approximately 188 million doses of hepatitis
 A vaccine have been sold worldwide, including 50 million doses in the United
 States. The 871 reports of serious adverse events included reports of GuillainBarré syndrome, transaminitis, and idiopathic thrombocytopenic purpura,
 which had been described previously in a published safety review, and
 seizures among children. The relation, if any, between the vaccine and
 reported serious events was not clear. In the original safety review, reported

adverse events were similar for VAQTA and HAVRIX. The safety of the vaccine will continue to be assessed through ongoing monitoring of data from VAERS and other surveillance systems.

Precautions Concerning HAV Vaccines

The safety of hepatitis A vaccination during pregnancy has not been determined; however, because hepatitis A vaccine is produced from inactivated hepatitis A virus (HAV) the theoretic risk to the developing fetus is expected to be low. The risk associated with vaccination should be weighed against the risk for hepatitis A in pregnant women who might be at high risk for exposure to HAV. Because hepatitis A vaccine is inactivated, no special precautions need to be taken when vaccinating immunocompromised persons.

Immune Globulin (IG)

Serious adverse events from IG are rare. Anaphylaxis has been reported after repeated administration to persons who have known immunoglobulin A (IgA) deficiency; thus, IG should not be administered to these persons. IG may interfere with the response to live, attenuated vaccines (e.g., measles, mumps, rubella, and varicella) when vaccines are administered either individually or as combination vaccines.

CONTRAINDICATIONS

CONTRAINDICATIONS

- Hepatitis A vaccine should not be administered to persons with a history of a severe allergic reaction to a previous dose of hepatitis A vaccine or to a vaccine component.
- Immune globulin: Anaphylaxis has been reported after repeated administration to persons who have known immune globulin A (IgA) deficiency; thus, immune globulin should not be administered to these persons.

QUALIFYING STATEMENTS

QUALLEYING STATEMENTS

Use of trade names and commercial sources is for identification only and does not imply endorsement by the U.S. Department of Health and Human Services.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

IMPLEMENTATION TOOLS

Staff Training/Competency Material

For information about <u>availability</u>, see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Staying Healthy

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Advisory Committee on Immunization Practices (ACIP), Fiore AE, Wasley A, Bell BP. Prevention of hepatitis A through active or passive immunization: recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR Recomm Rep 2006 May 19;55(RR-7):1-23. [197 references] PubMed

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

1999 Oct 1 (revised 2006 May 19)

GUIDELINE DEVELOPER(S)

Centers for Disease Control and Prevention - Federal Government Agency [U.S.]

SOURCE(S) OF FUNDING

United States Government

GUI DELI NE COMMITTEE

Advisory Committee on Immunization Practices (ACIP)

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

The Centers for Disease Control and Prevention (CDC), their planners, and their content experts wish to disclose they have no financial interests or other relationships with the manufacturers of commercial products, suppliers of commercial services, or commercial supporters. Presentations will not include any discussion of the unlabeled use of a product or a product under investigational use.

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Centers for Disease Control and Prevention. Prevention of hepatitis A through active or passive immunization: Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR Recomm Rep 1999 Oct 1;48(RR-12):1-37.

GUIDELINE AVAILABILITY

Electronic copies: Available from the Centers for Disease Control and Prevention (CDC) Web site:

- HTML Format
- Portable Document Format (PDF)

Print copies: Available from the Centers for Disease Control and Prevention, MMWR, Atlanta, GA 30333. Additional copies can be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402-9325; (202) 783-3238.

AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

Prevention of hepatitis A through active or passive immunization.
 Recommendations of the Advisory Committee on Immunization Practices (ACIP). Continuing education activity.

Electronic copies: Available from the <u>Centers for Disease Control and Prevention</u> (<u>CDC</u>) <u>Web site</u>.

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on December 1, 1999. The information was verified by the guideline developer on April 10, 2000. This NGC summary was updated by ECRI on June 16, 2006.

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Date Modified: 9/25/2006